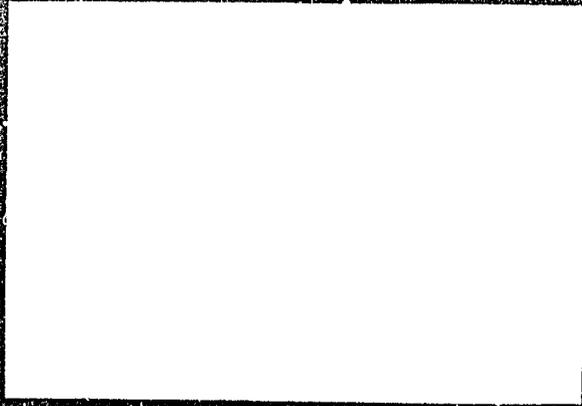


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URBAN EPI

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Other technical reports in this series are available from REACH and include the following:

- Computerized EPI Information Systems (CEIS)
- Missed Opportunities for Immunization
- Acceptability of Immunization
- Neonatal Tetanus
- Cost and Financing of EPI

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ACRONYMS

A.I.D.	(United States) Agency for International Development
EPI	Expanded Program on Immunization
DOH	Department of Health (Philippines)
KAP	Knowledge, Attitudes and Practices
MOHFP	Ministry of Health and Family Planning
NGO	Non-governmental Organization
REACH	Resources for Child Health
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development, country mission
WASH	Water and Sanitation for Health Project

EXECUTIVE SUMMARY

Half of the world's population will be living in urban areas by the year 2000. Urban health, therefore, should be of major concern to national planners and international development agencies. Because urban health issues have been largely unaddressed to date, priorities now need to be directed toward this end.

Defining what constitutes an urban area is still an unresolved issue, but there are some concrete elements of megalopolises that can be addressed so that health services can be effectively implemented. Such characteristics, which are reviewed in this report, include: population density and overcrowding, water and sanitation, infant and child mortality, transportation and pollution, and social stratification.

An intriguing aspect of urban health is the control of vaccine-preventable diseases and how different an urban Expanded Program on Immunization (EPI) must be from a rural EPI model. This issue of specificity of EPI in urban settings pertains to several operational areas: disease transmission, targeting specific groups, communication channels, channels of delivery, and monitoring and surveillance. These areas are also briefly described in this paper.

The Resources for Child Health (REACH) Project became involved in urban EPI in September 1986, first in Bangladesh, then in the Philippines, and later in Indonesia. In working to bring immunization to neglected urban areas in these and other countries, REACH has learned valuable lessons that the present document attempts to explain. These lessons are capsulized as follows:

- The delivery of immunization in urban settings is a formidable challenge to the national and international health community that has not yet been addressed adequately.
- Data related to urban EPI are usually unavailable or unreliable.
- The cultural and socioeconomic heterogeneity of different parts of a city require that approaches be tailored to their specific profiles.
- Epidemiology should shape the strategies used in urban EPI-preventable disease control.
- Campaigns and pulse activities have an important role to play in urban settings.
- Collaboration with municipal services, legally and technically responsible for the delivery of immunization services, is a new and important challenge for EPI.
- Physical accessibility to services is not an issue for most urban dwellers; however, the dropout rate remains an important problem.
- The use of physicians as a role model in the delivery of urban immunizations is crucial.

- **Non-governmental organizations (NGOs) are essential partners in the promotion of urban immunization services.**
- **Communication strategies can be cost-effective in urban settings, providing that messages and their timing are carefully directed to appropriate segments of the population.**

INTRODUCTION: URBAN HEALTH, THE FORMIDABLE CHALLENGE

By the year 2000, almost half (44%) of the world's population will live in cities. In the past, growth of cities was thought to be mainly the consequence of rural migration. Since the 1970s, this growth has been more an internal phenomenon, accounting for 61% of total growth (UNICEF, 1982).

Although rapid urbanization is frequently acknowledged, its implications have not yet been fully realized by politicians and policy makers. Resources to address the mounting problems of cities have not yet been mobilized in proportion to their magnitude, and decisive strategies have not yet been launched, despite a growing awareness by some agencies (Inter-regional Meeting, 1989). The inability of the municipal structures to provide adequate housing, water and sanitation, refuse disposal, and other basic services has been excused because of the impossibility of cities providing for squatters and other "unofficial" residents.

Historically, cities have often been identified as places of physical and even moral pollution. Alphonse Allais, the 19th-century French humorist proposed to build cities in rural areas because the air was cleaner there. Dickens' accounts of Victorian cities are present in our minds as are the haunting pictures of "How the Other Half Lives" by Jacob Riis, New York police reporter-turned-photographer of the poor in the Bronx.

Urban areas have large pockets of poverty and illiteracy and therefore of sick people. Crowding and promiscuity shape the transmission pattern of the Expanded Program on Immunization (EPI)-preventable diseases. With the possible exception of the Americas, ironically in 1990, the urban areas' vaccination coverage is commonly lower than coverage in rural areas.

The Resources for Child Health (REACH) Project, an Agency for International Development (A.I.D.)/Office of Health, Bureau of Science and Technology centrally funded project, managed by John Snow, Inc., has looked, since 1985, to promote better health to the most needy children. It has therefore been incumbent upon REACH to work and to continue to work in several important urban settings of the Third World. The lessons learned by REACH should benefit other colleagues, as well as A.I.D., to reorient priorities toward this enormous need, which to date has been largely unaddressed. A recent example of this point can be found in the preface of the April 1990 report on lessons learned from the Water and Sanitation Health Project (WASH, 1990): "The report has its limitations, the principal one being that most of Water and Sanitation Health Project's (WASH) experience has been in rural water and sanitation projects. Thus, the volume has little to say about urban and peri-urban systems."

URBANIZATION IN THE 1990s

The following sections review the magnitude and content of the concrete elements of the urban health scene. As stressed in a recent article, defining what constitutes an urban area is still an unresolved issue (Yach et al., 1990). (Even geographers claim to have difficulties in defining what is an "urban" settlement, although they add, in jest, that if they cannot define it, they can nevertheless recognize an urban area when they see one!)

Multiplication and Growth of Megalopolises

Number of large cities. In 1985, there were about 600 cities with more than half a million dwellers, 285 with more than 1 million, 99 with more than 2 million, and 40 with more than 4 million. Between 1950 and 1985, the number of cities with more than a million inhabitants grew from 70 to 285. In 2010, according to United Nations experts, that number will reach 500. At that time, 10 new cities per year will reach a population of 1 million during a generation (30 years), before a slowdown process (caused by the decline of natality in the Third World) takes place.

Among the 99 cities with more than 2 million people in 1985, 64 were in developing countries. By the year 2000, at least 60 cities (49 of them in developing countries) will have reached a population of more than 5 million. (See Appendix A.)

Size of cities. In addition to the increase in the number of large cities, what is striking is the increase in the size of the cities: in 1955, there were only 14 cities with more than 4 million people; in 1970, there were 22 cities with that size population; 40 cities in 1985; and between 57 and 60 projected for the year 2000. By the end of this century, the growth of cities will occur almost exclusively in the Third World. In 1900, among the 35 largest cities in the world, only 10 were in countries now belonging to the Third World: Beijing, Calcutta, Istanbul, Shanghai, Buenos Aires, Bombay, Rio de Janeiro, Cairo, Tianjin and Canton. In 1950, the above-mentioned cities were joined by Mexico City, Sao Paulo, Shenyang and Hong Kong; in 1960, by Djakarta, Seoul, Delhi, Wuhan; in 1970 by Manila, Teheran, Bangkok, Karachi and Madras; in 1980 by Baghdad, Bogota, Lima-Callao; in 1985, by Dhaka. Lahore, Bangalore and Caracas have joined by now.

Shift in cities' roles. Meanwhile, there has been a shift in the composition of the most populous cities: in 1900, the most populous cities in the world were New York, London and Paris; by 1985 London was the ninth and Paris the sixteenth. In 2000, London will be the eighteenth and Paris the twenty-fifth. In 2000, Sao Paulo will have more people than Paris and London combined. Manila-Quezon will outgrow Los Angeles.

Growth rate. The growth rate of some cities has accelerated significantly. It took 30 years for Berlin to double its population between 1910 and 1940; 15 years for Delhi. Lagos doubled its population in 12 years. Between 1990 and the middle of the 21st century, the major cities of the Third World will continue to grow. Although the growth rate of some cities such as London and New York are decreasing, they are exceptions. The growth of cities, believed in the past to be caused by rural migration, is now due to internal growth (61%).

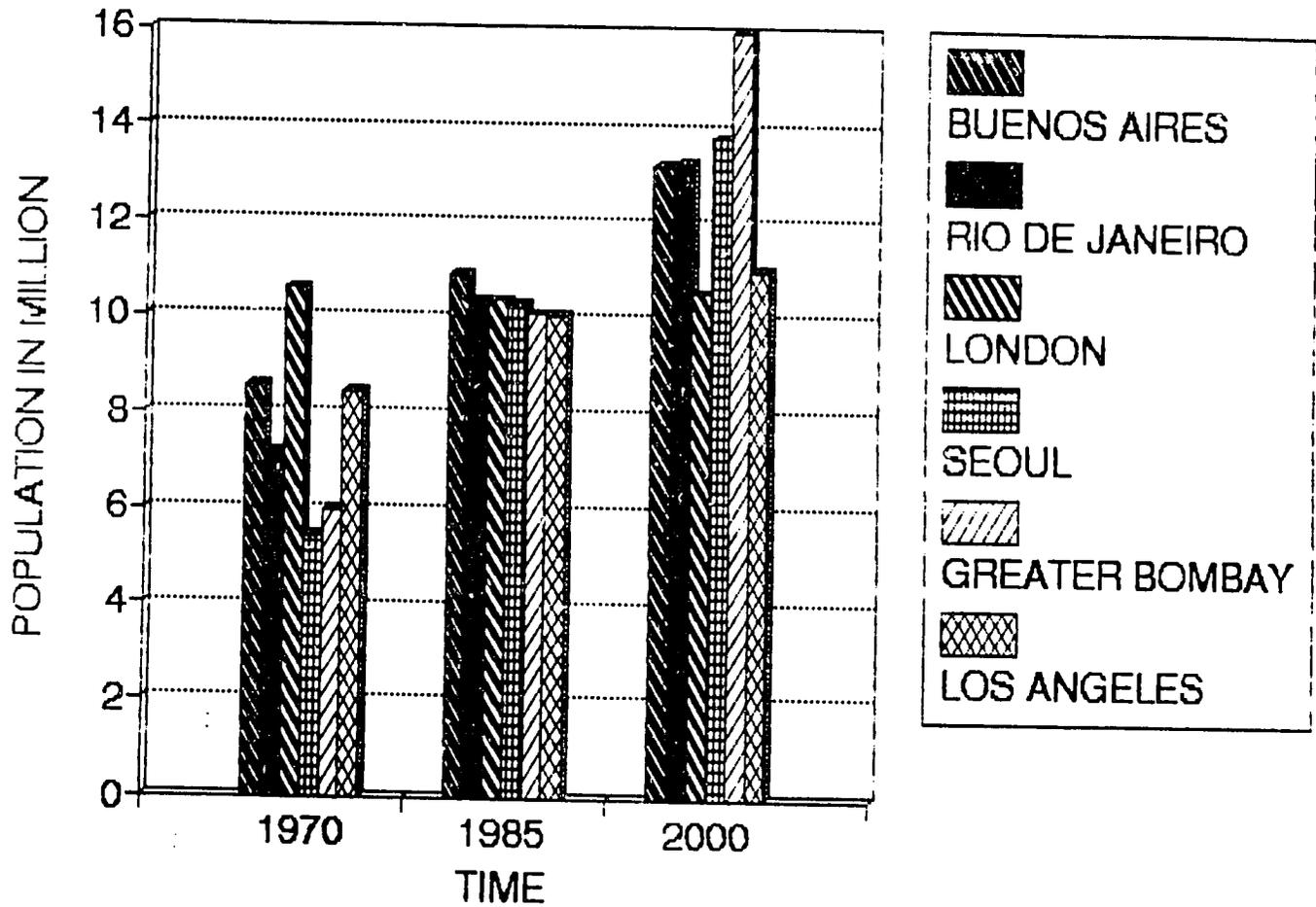
Table 1 summarizes the population growth in several megalopolises.

Characteristics of Megalopolises

Population density and overcrowding. Average population per square mile is not a reliable indicator of overcrowding unless mapping concentric circles from the city center is used. Using that method, Bombay, Tokyo, Barcelona and Ahmedabad have the same density of population (42,000 people per square mile); San Francisco and Karachi have a density of 14,000 people per square mile.

Table 1

MEGALOPOLIS 1975-2000



Source: Encyclopedia Universalis, Paris: 1988

A megalopolis may have a high population density without overcrowding. Lagos, for example, has a low population density but is overcrowded because most families of seven or eight people live in a single room. In Milan or Paris, where most of the buildings have between five and ten floors, the population density is high without overcrowding. Hong Kong and Cairo are both densely populated and overcrowded.

It is useful, for such operational reasons as identifying high-risk areas, to distinguish between the following zones in a city:

- The old part of town often has a lower density and has well identified economic activities and infrastructures.
- The intermediary zone has newer houses and infrastructures.
- The peripheral zones are of two different types.
 - (1) The shantytowns (bidonvilles) have already been settled for some time; the legal status of the habitations is more or less settled. There is little infrastructure but some type of social organization exists. The population is working at improving their conditions of life.
 - (2) The slums (taudis) are where recent migrants, some illegal squatters, live on lands which belong to someone else. Slums are characterized by the precariousness of the living conditions. There is little if any infrastructure or social organization. The population density can be high as in the Latin American slums or low as in Sub-Saharan Africa.

Water and sanitation. Two indicators are useful to assess the living standards in large cities: the percentage of housing connected to water and sewer systems and the infant mortality rate. Water supply and sewer systems are costly investments for cities (more than electricity), and it is not surprising that their absence is the rule rather than the exception. In 1970, less than 10% of houses of Djakarta, Dhaka and Rangoon had access to piped water, and only 10% to 20% in Brazzaville, Calcutta and Asuncion. In Cairo, Istanbul and Rio, between 40% and 60% of houses had running water. The rate of access to a sewer system followed the same pattern. Such statistics are, of course, misleading because they do not reflect differences within cities. For example, in the suburbs of Rio de Janeiro, 50% of the population had no access to piped water or gas and 70% had no access to a sewer system.

All rivers flowing through major cities are polluted, although at varying degrees. The Shanghai Huangpu is probably the most polluted river in the world. The Ganges river collects the waste products of 12 major cities, and the two rivers of Sao Paulo are open sewers. Studies have confirmed the obvious relationship between the lack of clean water and sanitation and infant mortality.

Infant and child mortality. Infant mortality, although a composite indicator, clearly reflects this dramatic situation in the main cities of the Third World. The figures related to cities should be analyzed cautiously. First, all authors of studies noted the absence of urban routine data and denominators. Second, data most often relate to the city globally and do not

differentiate between the various types of settlements within the city. It is fair to say that overall figures are not useful for epidemiologists or public health workers.

For the period 1976-1982, infant mortality was 69 per 1000 births in Manila, 56 in Sao Paulo, 52 in Rio City, 45 in Mexico, 25 in Istanbul, 25 in Bangkok and 15 in Beijing. Although the Europeans and Japanese cities have mortality rates lower than 7 per 1000, the U.S. cities have high infant mortality rates: 23.1 in Washington, 19.7 in Detroit, 16.6 in Chicago, and 12.7 in New York. These 1989 figures, although an improvement upon earlier figures, reflect both the presence in these cities of large groups of minorities as well as the dilapidated condition of the inner cities, which contain ghettos of poverty.

With the exception of the United States and Egypt, the infant mortality in cities is often lower than in rural areas. Among other factors, this might be related to medical services (whether public or private): in Kenya, Senegal, Haiti or Thailand there are 10 to 30 times more doctors in the capital city than in the rest of the country.

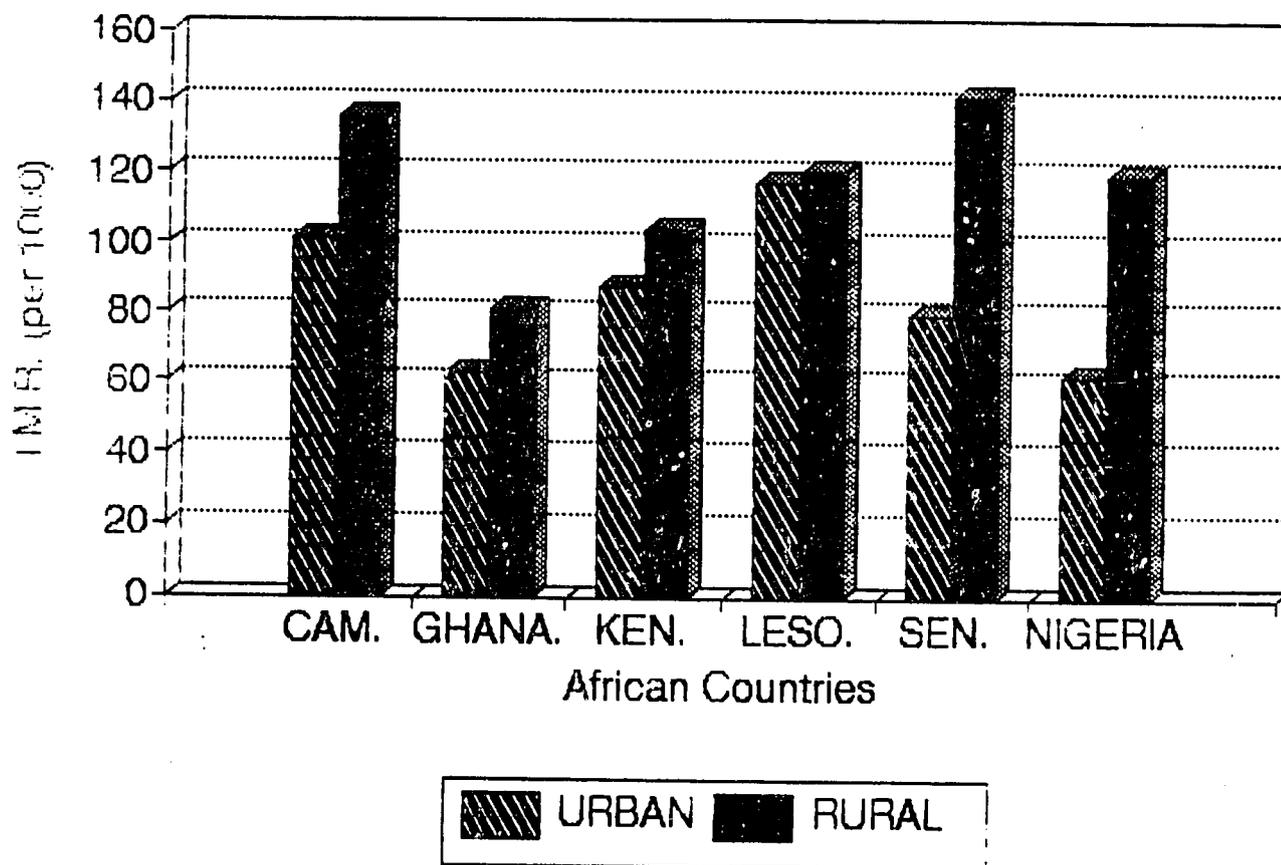
In Africa "overall under-five mortality is higher in rural than in urban areas"; "small cities have lower mortality rates than big cities, because of the existence of marginal and slums populations in big cities"; and "inequalities in mortality rates between habitats are more important for children 1-5 years old than for infants. One- to four-year-olds' mortality is more sensitive to environment[al] character[istics] (physical, economic, socio-cultural) than infant mortality. Young children are better protected than their elder siblings against infections, probably because of breast-feeding" (Akoto, 1988). (See Tables 2 and 3.) However, as noted by Jon Rohde about India "while urban mortality is less than rural, average often obscures the very truth of poverty. Infant mortality in some slums far exceeds the rural average" (Rohde, 1988).

Transportation and pollution. In the Third World, types of transportation vary from region to region. In Cairo, Seoul or Havana buses are used most; in Dhaka, there are more than 200,000 rickshaw operators. In Chinese cities the bicycle is omnipresent. However, the traffic congestion in Djakarta or Bangkok is as dramatic as in New York or Los Angeles. Atmospheric pollution is rising, and in some places, such as Los Angeles or Ankara, it is reaching alarming levels. (During the winter of 1989, schools were closed for several days in Ankara, and children and old people were requested to stay indoors.)

A report entitled *State of the Environment 1990, Children and the Environment Today* (UNEP/UNICEF, 1990) claims that the world environmental degradation is killing children and calls on the international community to pass on a better world to their descendants. The report, issued jointly by the United Nations Children's Fund (UNICEF) and the U.N. Environment Program, says millions of children are dying each year from the health and social effects of chemical poisons, air and water pollutants and other forms of environmental degradation. The report says 14 million children under the age of five die every year in developing nations as a result of such environmental hazards as pollution or problems related to the environment, including malnutrition, diarrhea and measles.

Table 2

Infant Mortality by Habitat. 1985



Source: Akoto E, Hill AG. In: Tabutin D. ed. Populations et sociétés en Afrique au sud du Sahara. Paris: L'Harmattan, 1988:325.

Table 3

Child Mortality Rates by Habitat

	CAMEROON	GHANA	KENYA	LESOTHO	SENEGAL*
Infant Mortality Rate					
URBAN	101	63	87	117	79
RURAL	136	81	104	120	141
RATIO R/U	1.35	1.29	1.20	1.02	1.78
1-5 Years Mortality Rate					
URBAN	70	50	36	59	116
RURAL	109	59	64	50	222
RATIO R/U	1.56	1.18	1.78	0.85**	1.19

*Senegal figures do not include major urban centers.

**Indicates a statistically non-significant difference (95% CE).

Sources:

(1) Akoto E. (1985)

(2) Hobcraft J. et al (1984).

Social stratification in the developing country megalopolis. In all big cities, social stratification is apparent: affluent suburbs are surrounded by slums; downtown, modern futuristic buildings tower above shacks without water or electricity. In Asia, Africa, and Latin America, a growing proportion of the population lives in extremely precarious conditions in shacks made of cardboard, tin and wood, on land belonging to absentee landlords or municipalities. According to 1980 World Bank statistics, 60% of the population of Abidjan, Bogota, Yaounde and Lome lived in slums; more than 50% in Recife, Brasilia, Izmir and Dakar, and between 40% and 50% in Lima, Caracas, Colombo, Calcutta and Kinshasa. Now, ten years later, the situation is worse.

In developed countries, urbanization is associated positively with literacy, mass communication, schooling, political development and employment; negatively with birth rate and employment. However, in developing countries where rural overcrowding feeds urban overcrowding, the urban poor quarters appear to reproduce the sociological patterns of the rural world.

SPECIFICITY OF EPI IN URBAN SETTINGS

The most intriguing aspect of the control of EPI-preventable diseases in urban settings is the question of its specificity. What makes things there different from the more global, rural EPI model? How should strategies be modified to address adequately the specific issues related to the urban situations? The issue of the specificity of EPI in urban settings pertains to several operational areas:

Disease Transmission

There is evidence that, at least for some of the EPI diseases, the pattern of transmission differs between rural and urban areas and the risk of contracting diseases is generally higher in urban areas, particularly in poor, densely populated neighborhoods. For example, in many cities the transmission of measles is no longer seasonal but endemic. The severity of the disease is said to be generally higher in urban areas because of the intensity of exposure. In the absence of immunization, all urban children will be infected by measles and 1-5% will die (Foster, 1990).

Another interesting epidemiological feature of the pattern of some EPI-preventable diseases in urban settings refers to the early age of occurrence. The now classic example is Taylor's study in Kinshasa, Zaire, where 27% of all measles cases were reported among infants less than nine months of age and 47% of measles cases occurred among children less than one year of age (Foster, 1990). The synergistic effect of higher risk of infection, earlier age at infection, and greater severity explains the overall effect on the poor nutritional status and high mortality rates.

The role of cities in the transmission of diseases in rural areas and vice-versa is still poorly understood as is the influence of the interruption of urban disease transmission on rural disease incidence. Lessons from the Smallpox Eradication Program on the epidemiology of transmission in urban settings could be of use (Joarder et al., 1980).

Targeting Specific Groups

The urban poor are almost universally described as "forgotten", "peripheral", "on the fringe", "unaccounted for", "non-citizens". They are often thought of as a uniform, nondescript mass. Experience has shown that such a global approach has failed as cities harbor a mosaic of urban poor groups that differ by culture, language, literacy, socioeconomic levels and duration of residence. Each group's needs must be defined and appropriate specific strategies responsive to identified needs implemented. Finding out how to reach the many different target groups living in cities demands the collaboration of sociologists, health planners, epidemiologists, and specialists in advertising and communication.

Communication Channels

Rapid urban migration means that there has been a loosening (a disintegration according to some authors) of village culture and social fabric, and therefore of the classic channels of communication. Radio and television sets are generally ubiquitous in major cities and have proven efficient in delivering EPI messages. Although illiteracy may still be high among mothers, the number of years of exposure to urban life was found to correlate positively with child survival in several urban settings in Africa. Also, a mosaic of cultures and languages from different parts of the country may also be found in major cities, each with its own needs.

Channels of Delivery

The concentration in cities of a curative health infrastructure and the existence of a large number of health facilities would seem to increase the accessibility of urban dwellers to services.

Two factors affect the accessibility of health services, including immunization services, to the poor. One is managerial, the other economic.

As pointed out by K. Olivola, "In many countries the national responsibility for health services remains with the Ministry of Health, with the exception of the cities, particularly the largest ones. These cities find the municipal government with responsibility, often legally mandated, for health services. However, the nature of urban government limits their abilities to implement an effective citywide health service program. Municipalities typically focus on urban physical infrastructure and revenue and user charge collection needs (roads, water and sanitation distribution systems, solid waste collection, street lighting, public markets, transportation systems, land development, public housing, setting tax structures and their collection). Accordingly, municipal governments are staffed by public finance administrators and engineers. Municipal health offices, where they exist, are typically grossly understaffed and very poorly financed. Their responsibilities include health inspection of restaurants, mosquito spraying for malaria control, running city vaccination clinics, and conducting occasional epidemiological surveys. Many Third World cities are still geared only to cholera control and smallpox vaccinations" (Olivola, 1988).

In 1988, Jon Rohde reminded us that "the urban poor are the hardest hit ... (they) are least capable of affording illness, for the price of treatment is relatively high and, in a money economy, cash payment is almost a necessity" (Rohde, 1988).

Private providers play an essential, albeit not yet fully recognized, role in the delivery of immunization in urban settings as documented in Indonesia, India and Bangladesh. A July 1990 coverage survey in Dhaka found that private practitioners provide 16% of childhood immunizations and 30% of TT immunizations to pregnant women. Besides private practitioners, of course, non-government private organizations may play important roles in social mobilization, provision of vaccines, and enumeration of populations.

Monitoring and Surveillance

Getting a reasonable estimate of the size of the often transient target groups proves to be extremely difficult in urban settings; so are attempts to enlist the collaboration of private providers in submitting monthly figures of vaccine doses distributed. With numerator and denominator figures often unreliable, the calculated coverage cannot help but be soft, and the use of traditional monitoring tools must be reconsidered. Satellite or aerial photographs of cities have been used with success in some countries to identify high-risk areas. In any case, the first priority for improving immunization services in urban areas is to obtain useful information. Sentinel surveillance systems must be installed to monitor EPI target diseases, using one or more existing inpatient, outpatient, or rehabilitative facilities (Henderson, 1986).

REACH ACTIVITIES IN URBAN EPI: COUNTRY-SPECIFIC LESSONS LEARNED

In the first half of the year 1990, REACH undertook an internal assessment of its EPI activities in the different countries where the project had worked. The main conclusions for the urban EPI activities are summarized in the following paragraphs:

Bangladesh

In Bangladesh, REACH became involved in 1988 in a major effort to improve the protection conferred by vaccines to young children and to women of childbearing age living in urban areas. About 20% of the total population of Bangladesh is believed to reside in urban areas, and this population is expected to increase to 30% within the next 10-15 years.

Until 1986, the United States Agency for International Development (USAID) in Bangladesh had emphasized support for family planning. In 1986 and 1987, REACH took an active role in identifying a need for USAID assistance in EPI. REACH helped convince both UNICEF (the major EPI donor) and USAID that USAID, through REACH, could play a beneficial role in supporting urban EPI. By 1988, USAID became supportive of the involvement of rural family planning promoters in immunization activities. Persistence, diplomacy and faith in the vital role USAID could play in the neglected, albeit essential, urban aspects of EPI eventually paid off.

The urban EPI strategy design was based on the premise that specifically tailored approaches were required to address the characteristics of urban populations, particularly the high-risk groups. Therefore, the needs of each municipality were to be assessed individually and specifically at the beginning of REACH's involvement. A separate plan of action was to be prepared for each municipality based upon the identified needs.

Large cities, like Dhaka, were divided into several more manageable operational units, called zones. A detailed initial diagnostic survey of each zone was identified as a priority. This survey was to include a listing of all health facilities involved in immunization, a detailed inventory of their resources, a mapping of areas, and a 30-cluster coverage survey to provide the profile of immunization activities in each zone. The initial survey provided concrete data to guide the preparation of a zonal plan of action.

The results of REACH's involvement in urban EPI took time to surface. An explanation of the initial constraints were summarized in a UNICEF document:

"Although REACH started to be involved as early as in 1986, the national EPI did not really move into urban areas until the fall of 1987. Start-up activities in municipalities were slow because of the need for mobilizing municipalities which must take major responsibility for EPI activities as their municipal charters mandate that they take full responsibility for health care within their boundaries. Complications have arisen because municipal government is not under the Ministry of Health and Family Planning [MOHFP], but rather falls under the umbrella of the Ministry of Local Government, Rural Development and Cooperatives. Consequently, coordination between municipal health departments and the national EPI has not been clear in many instances.

Due to the shortage of manpower in the municipalities, the ambiguity of the Ministry of Health's role in the cities and towns, and the lack of experience by government officials in working in the urban slums, the active involvement of [non-governmental organizations] NGOs and other agencies was found essential" (Olivola, 1990).

REACH liaised among the different partners responsible for the implementation of immunization services in urban areas: municipal governments, MOHFP, UNICEF and NGOs. The collaboration of each partner is essential for such a complex program to progress. A particularly complex task, for the reasons explained above, was the mobilization of municipal resources. To address this need, an EPI coordination committee that includes the municipal chairman was formed in each municipality. The chief medical officer or one of his staff acts as the EPI Coordinator.

REACH and its partners realized the need to delay the use of mass media aimed at raising the awareness of and demand for immunization until many new immunization sites were established to respond to it. Immunization sites had to be identified, equipped and have their staff trained. Understandably, this contributed to the slow start-up of EPI in large cities where logistic issues were sizeable.

The immunization-related behavior of mothers living in several Dhaka slums was explored through an anthropological study which showed that empathy by the health staff could overcome social and cultural barriers and greatly contribute to a better acceptability of immunization services. However, REACH also learned that the acceptability of the study results by the EPI team was a function of the team's earlier involvement in the identification of the study goals and the practical and operational nature of the conclusions and recommendations of the study.

REACH has proposed the use of a "seal of safety" on immunization cards, but it has not yet been adopted. The idea is to build the concept of protection against six diseases for full protection.

The flexibility of REACH interventions and the relatively rapid availability of funds at times when other resources were unavailable was identified by urban EPI partners as a significant factor in REACH's positive role.

The REACH team had to strike a balance constantly between the epidemiological and ethical needs for increasing immunization coverage, and the needs to develop a sustainable EPI.

Philippines

REACH has been collaborating with the Philippines Department of Health (DOH) since 1986. REACH's main involvement in urban EPI was to assist in the preparation of a document on urban strategy.

The urban EPI document was prepared somewhat independently by REACH and its impact has been indirect: it created awareness about special urban EPI needs and approaches, both among DOH staff and donors, particularly UNICEF. One result of this awareness was a set of UNICEF-funded inter-city conferences in 1989 to facilitate exchange of information and provide a forum for an informal needs assessment of urban immunization programs. Another has been the training of city health officials with EPI mid-level manager training courses. Neither of these is a direct result of the REACH document; however, the strategy paper provided a focus and served as a point of departure.

The document prepared by DOH with the assistance of REACH consultant Pamela Turner on "Urban Accelerated Strategy 1988-1990" is a thorough and detailed paper on the specific conditions prevailing in urban settings around 1988 (Turner, 1988). Although the situation has improved several years later, the content of the report is still relevant.

In the Philippines, for the 1986 and 1987 period, vaccination coverage in urban areas was 35% lower than in rural areas. The lower performances could be attributed to high mobility of population, low social cohesion, a scarcity of community-level health manpower and weak institutional linkages between DOH and city health offices. In addition, donor aid was generally concentrated in rural areas.

The REACH document on urban EPI in the Philippines identified the following main obstacles to the delivery of immunization services:

- Lack of coordination between local municipal governments and DOH. Such a dichotomy meant that the DOH had no effective authority in cities and municipalities. Since January 1988, when the DOH began funding some key positions in city health departments, the situation has improved.
- As found elsewhere, vaccination coverage in small cities or minor urban areas were close to the best performing areas, which in the Philippines are the rural areas.
- Major urban areas had poor coverage, and among them, the slums - where four million people resided - had the lowest coverage. The reasons pertain to:

Methodological issues:

- The definition of an urban area was not always clear. The limits of health center catchment areas were blurred.
- There was an absence of reliable data on the size of the population at risk because of their high mobility and their lack of "official" status - since they did not pay taxes.

Accessibility of services:

- About 60% of slum dwellers had "illegal" status and squatted on government land. Local governments were reluctant to "legalize" the situation by providing government health facilities such as health centers. This resulted in fewer health facilities per capita in urban than in rural areas. Outreach sites for immunization were often poorly chosen, resulting in minimal attendance.
- Except for physicians, health manpower per 10,000 population favored rural areas.
- More mothers appeared less informed of the availability of immunization services and of its benefits in urban (17% of mothers surveyed) versus rural areas (4%-10%).

Organization of EPI:

- The organization of EPI services followed a structure weighted to address rural concerns over those in urban areas. DOH staff were reluctant to reorganize services unless convincing documentation of urban needs were forthcoming.
- Because of the relative autonomy of municipal health services in the past, there was no EPI tradition. The planning and management process for EPI acceleration was generally weak in urban areas. Supervision was weaker than intended.
- Physicians, whether in private practice or in their supervision of midwives, too often delayed vaccination of children because of "sickness". Up to 40% of children attending an immunization clinic were turned down for immunization.
- Because of high mobility among slum dwellers, the dropout rate was high. Tracking of children was particularly difficult. However, a UNICEF survey indicated that one-third of male household heads and one-fourth of female household heads were participants in community organizations. This factor could be used to facilitate tracking.
- Although it may not be possible to replicate this approach in every urban setting, EPI was able to use a master list of all eligible infants. The list was prepared by teachers, Rotarians and local leaders who went house-to-house to include all children. (Master listers were paid per child listed.)

Social mobilization:

- Private voluntary organizations had an active involvement in EPI in urban areas, especially the Rotary Polio Plus. However, their collaboration with DOH needed to be re-oriented toward sustainability and mutual understanding of each other's priorities.
- Local political leaders had a great deal of influence in their local community and had been used for the "channelling" approach.

Indonesia

In Indonesia, despite the identification of the EPI needs of urban areas since 1987, it was only in early 1989 that REACH could start working with its national colleagues in the cities of Jakarta and Surabaya. Significant bureaucratic contracting delays further postponed the implementation of elaborate social marketing studies aimed at determining the specific profiles and needs of the two cities' dwellers regarding knowledge, attitudes and practices (KAP) toward immunization. The contribution of the study's valuable results to the determination of immunization messages and policies, is unfortunately diminished, at least in the short run, as the municipal EPI committees could not afford to wait any longer for the study's results and had to move forward in the planning of their activities.

From its work in Indonesia, REACH has learned several lessons:

- Urban populations are a mosaic of groups with different cultural, religious, ethnic, and socioeconomic characteristics. Their use and acceptability of immunization services are different and specific and are, somehow, related to their perception and previous use of immunization services. An understanding of the above stratification and of the needs of each group is essential for the improvement of overall immunization coverage and of vaccine-preventable diseases. In the crowded urban environment, the health of all children rich or poor is dependent upon the health of each child. Although epidemics exact a heavier toll from the children of the poor, no child is totally immune.
- There is often a dearth of data related to urban health and EPI in particular. Generalizations are not enough; useful, reliable data must be collected. Coverage surveys linked to KAP or social marketing studies are an efficient tool to assess the determinants of the use of immunization services. However, great effort is needed to translate the results into operational terms.
- Such surveys, as above, must be designed with samples large enough to stratify for relevant variables such as socioeconomic status, vaccination status (none, partial, fully), ethnicity, etc.
- Significant differences in coverage between cities exist and in Indonesia, Jakarta remains behind Surabaya.

	<u>Jakarta</u>	<u>Surabaya</u>
Random sample:	300	312
<u>Coverage</u>	%	%
Full	48	62
Partial	46	31
None	6	7

Source: Maran E, Simpson-Hebert M. Executive summary to SRI report. Arlington, VA: REACH, May 1990.

- The "partial" group can be characterized as being slightly less educated, less knowledgeable and less media involved than the mothers in the "full coverage" group. Because of these characteristics, as well as their lesser self-confidence, these mothers need more constant reminding, encouragement and reinforcement of the benefits of immunization.
- There were no significant differences between the "full" and "partial" coverage groups on how to best reach each group. Personal communications from health workers and local midwives were most important. Husbands, mother-in-laws and mothers had a role in the more difficult "none" segment.

- The causes of partial immunization revealed useful information: 48% of mothers cited the sickness of the baby as a reason for non-immunization, of which 41% were denied immunization by the immunization staff. This is a significant cause of "missed opportunity for immunization."
- The dropout problem was found important in both cities. About 38% of the "partial" mothers (compared to only 28% of the "full" and 65% of "none") acknowledged that "knowing that the shot gives baby fever" is an immunization deterrent.
- Among the "partial" mothers, 26% said the vaccinator was not there, 18% were denied vaccination because they could not show a vaccination card, 10% were told there was no vaccine, 10% were told that their baby was too old, 8% were told that their baby was underweight and 3% were told that there was vaccine but that the staff would not open a new vial.
- The "none" group deserves attention. Its percentage might be considered insignificant (6.5-7%). However, when referred to the total population of these two cities, its absolute number become important. Again, the epidemiological role of reservoir of such a group must be kept in mind, since it could, by itself, be responsible for the endemic transmission of measles. In this group, 40% of the mothers were illiterate, 31% of them considered themselves "too busy" to take their child to an immunization clinic, and 28% felt that an unimmunized child was not at risk for diseases.
- Transients were one of the special sub-groups studied. It was found that the low coverage among them was because of their lack of awareness of the availability of services. Once they start the course of immunization, their dropout pattern parallels that of the general sample.

In the summer of 1990, a REACH urban EPI planner worked with the EPI and respective cities' EPI committees to help plan a strategy for improving urban EPI coverage. The strategies included:

- **Service improvement.** It was decided that refresher training was indicated for vaccinators so that sick infants would be immunized. In addition, the market research identified other areas (side effects, poor attendance by vaccinators, growth cards, measles, etc.) that need to be corrected during refresher training.
- **Social marketing.** While refresher training is proceeding with vaccinators, messages will be developed for the public to reinforce the upgraded skills of the vaccinators. These include encouraging mothers to bring their infants for vaccinations even if ill, informing mothers that fevers from vaccinations are not harmful to their infants, and emphasizing the need to vaccinate for measles.

These ongoing activities in Indonesia, in which REACH played a small role, constitute one of the few systematic efforts to take a comprehensive approach to the challenge of locating, understanding, and reaching the unimmunized in urban areas.

Turkey

In Turkey, rapid urbanization has taken place since the 1970s, resulting in anarchic settlements of the poorest strata of the population, called "gecekondus". A 1985 pre-campaign coverage survey found the coverage rates to be particularly low among gecekondu children. Apparently, the 1985 campaign had a positive effect on coverage. From 1986 onward, MOH put emphasis on gecekondu areas for health services, including immunization. Results of a coverage survey in 1988 from three urban settings reflected that effort and confirmed the sustainability of the results.

REACH participated in the 1985 rapid assessment and, in close collaboration with the Turkish EPI, organized and analyzed the 1988 surveys. (See Table 4.)

Senegal

REACH participated in the 1987 30-cluster vaccination coverage surveys and prepared a comprehensive review of the impact of the 1986-1987 accelerated vaccination campaigns.

Although children in rural areas benefitted the most from the campaigns, in urban areas, children completely vaccinated increased 1.5 times, 1.2 times in Dakar alone. Table 5 summarizes the results by antigens and by type of settlement.

OVERALL LESSONS LEARNED

Lesson One: The delivery of immunization in urban settings is a formidable challenge to the national and international health community that has not yet been addressed adequately. Because of the magnitude of urban populations, the high rate of transmission of EPI-preventable diseases, and the severity of infections in overcrowded urban environments, it is urgent that EPIs intensify efforts in urban areas.

Lesson Two: Data related to urban EPI are usually unavailable or unreliable. As a prerequisite to interventions, essential indicators must be collected during an initial diagnostic phase and later monitored as the activities progress in each operational zone of the city.

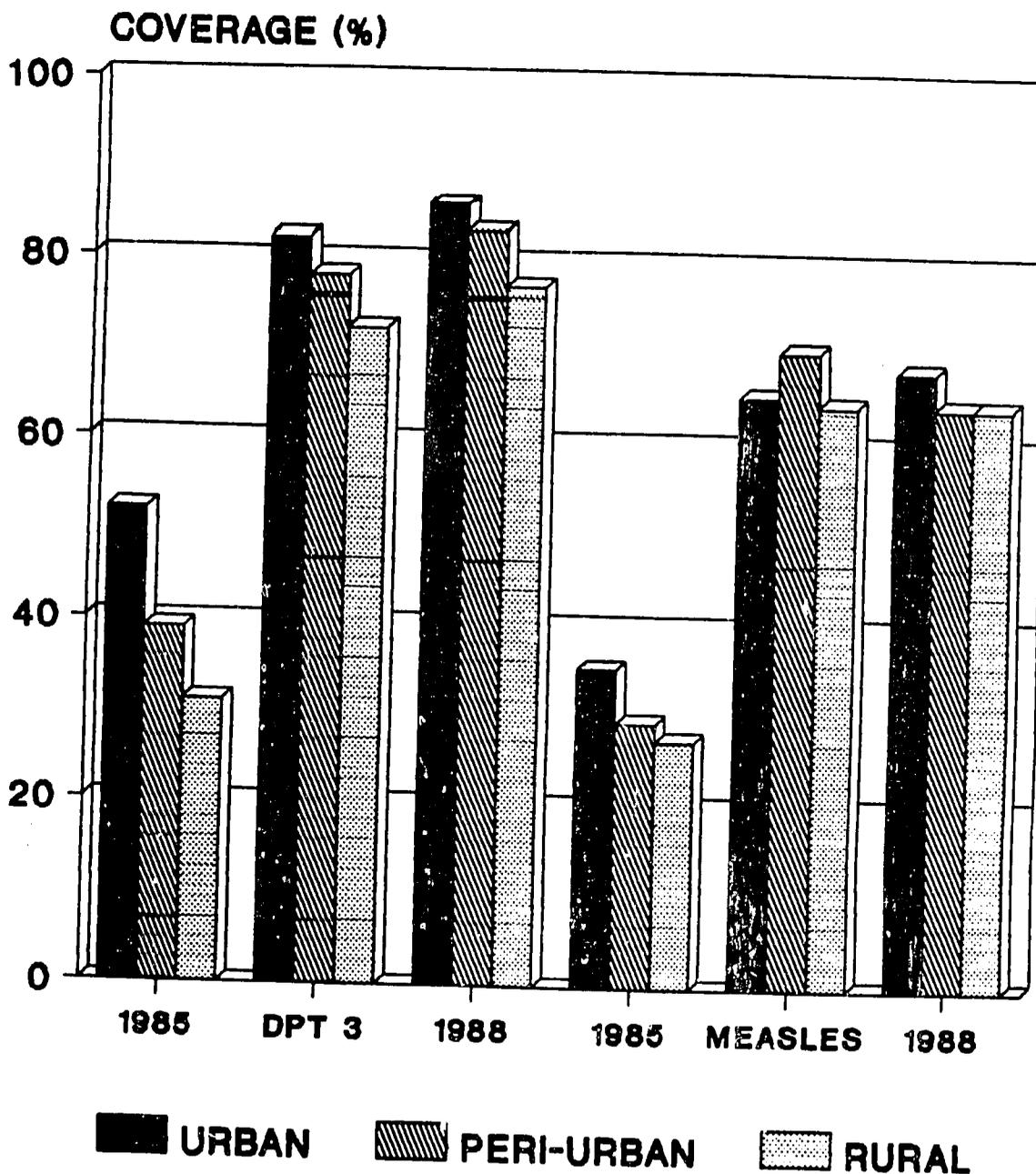
Lesson Three: The cultural and socioeconomic heterogeneity of different parts of the city and of the peri-urban areas require that approaches be tailored to their specific profiles.

Lesson Four: Epidemiology should shape the strategies used in urban EPI-preventable disease control. The specific patterns of disease transmission, roles of high-risk areas and groups, identification of reservoirs of non-immunized children, roles of fairs, religious gatherings, and seasonal migrations must be quantified.

Lesson Five: Campaigns and pulse activities have an important role to play in urban settings; they build public awareness of the need for immunization and can interrupt the chain of disease transmission. In the case of polio, for example, these approaches can interrupt the chain of transmission.

Table 4

COVERAGE BY TYPE OF SETTLEMENT

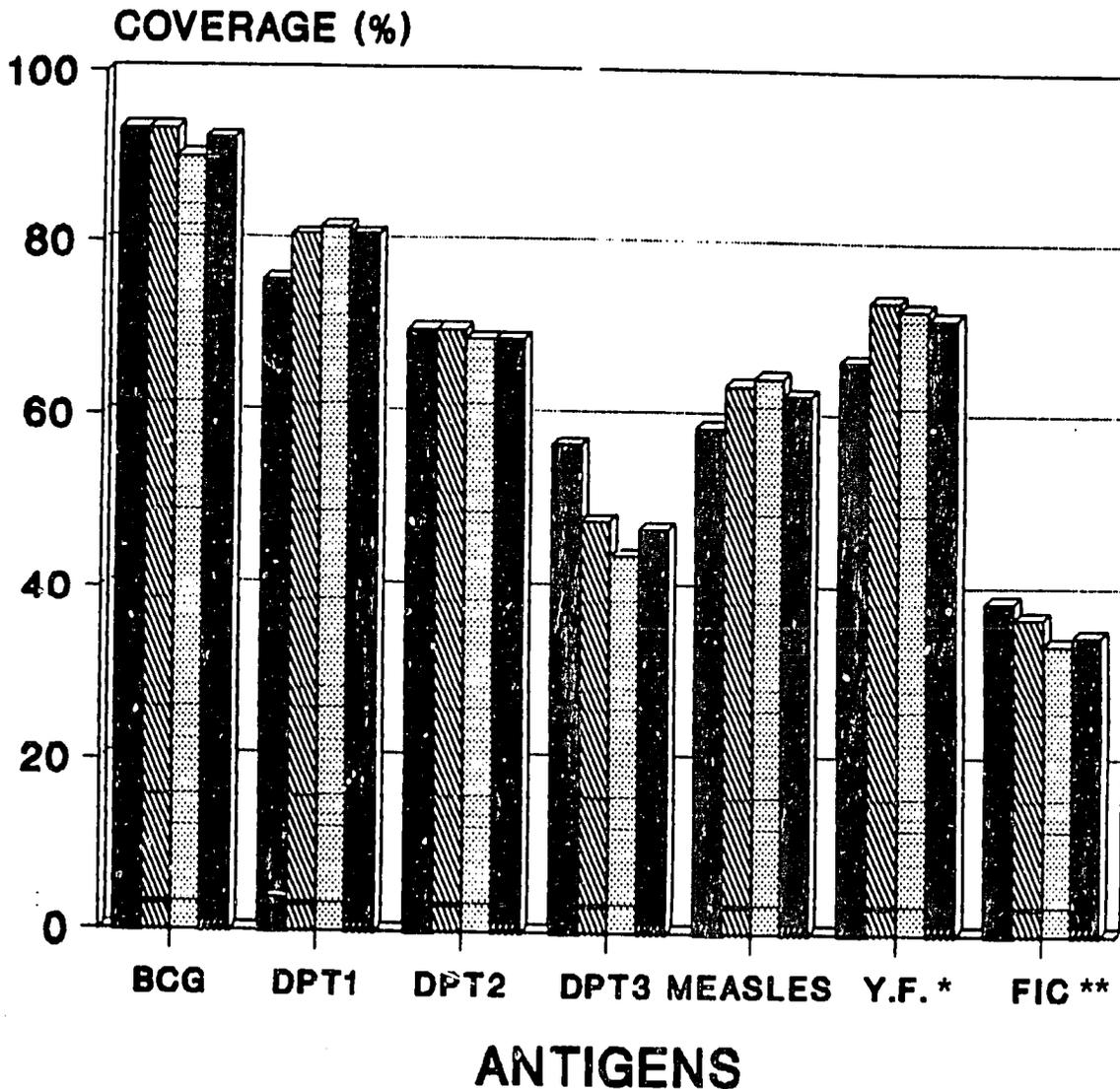


TURKEY 85-88

Source: Unver N, Biliker MA, Claquin P. Results of a vaccination coverage survey in nine provinces in the Republic of Turkey. Arlington, VA: REACH, January-February 1988.

Table 5

COVERAGE BY TYPE OF SETTLEMENT



DAKAR

URBAN

RURAL

OVERALL

* Yellow fever

** Fully immunized children

SENEGAL 1987

Source: Brenzel L, Claquin P, McLellan I, Stansfield S. Rapid assessment of Senegal's acceleration phase. Arlington, VA: REACH, November 1987.

Lesson Six: Collaboration with municipal services, legally and technically responsible for the delivery of immunization services, is a new and important challenge for EPI. EPI coordination committees, chaired by the municipal chairperson, often provide a flexible forum to coordinate the resources each partner (including NGOs) can offer.

Lesson Seven: Physical accessibility to services is not an issue for most urban dwellers. However, not completing the series of basic immunizations (measured by dropout rates) is an issue. To reduce the dropout rate, the quality of the services provided by health facilities must be improved significantly: service hours must be convenient to mothers, health workers must learn to talk to mothers, immunization cards must be screened or provided, contraindications to vaccinations must be clearly understood, and antipyretics should be provided. All antigens and sufficient sterile injection equipment must be available on immunization days.

Lesson Eight: The role of physicians in the delivery of urban immunizations is crucial for two reasons: first, because of their share in the total doses administered, particularly private physicians, and because they do not report to health services; second, because physicians play an important negative role in denying immunization to infants because of "sickness". The role model of physicians for their staff should not be underestimated. Refresher training on EPI for physicians and pediatricians is a priority action.

Lesson Nine: NGOs are essential partners in the promotion of urban immunization services. There are many NGOs, each attuned to the specific needs of different groups within cities. NGOs can identify high-risk groups, mobilize resources, broadcast messages, implement follow-up, and foster the sustainability of services. However, the Ministry of Health must assume the overall coordination of immunization activities.

Lesson Ten: Communication strategies can be cost-effective in urban settings, providing that general awareness-creating messages and events are supplemented by messages and timing carefully directed to appropriate segments of the urban population. The concept of the "seal of safety" should be tested and, if found efficient, promoted to reduce dropouts and to protect infants earlier. Careful planning of communication interventions, including message content and channels of delivery, are conditions of their success. The impact of each type of communication strategy should be evaluated regularly, which is presently not often done.

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APPENDIX A

URBAN POPULATIONS*

URBAN AREA	POPULATION (IN MILLIONS)		
	1970	1985	2000
TOKYO - YOKOHAMA	14.91	18.82	20.22
MEXICO	9.12	17.3	25.82
SAO PAULO	8.22	15.88	23.97
NEW YORK	16.29	15.64	15.78
SHANGHAI	11.41	11.96	14.3
CALCUTTA	7.12	10.95	16.53
BUENOS AIRES	8.55	10.83	13.18
RIO DE JANEIRO	7.17	10.37	13.26
LONDON	10.59	10.36	10.51
SEOUL	5.42	10.28	13.77
GRAND BOMBAY	5.98	10.07	16.0
LOS ANGELES	8.43	10.05	10.99
OSAKA-KOBE	7.61	9.45	10.49
BEJING	8.29	9.25	11.17
MOSCOW	7.07	8.97	10.4
PARIS	8.34	8.68	8.72
DJAKARTA	4.48	7.94	13.25
TIANJIN	6.87	7.89	9.7
CAIRO/GIZA	5.69	7.69	11.13
TEHRAN	3.29	7.52	13.58
DELHI	3.64	7.4	13.24
MILAN	5.52	7.22	8.15
MANILA/QUEZON	3.6	7.03	11.07
CHICAGO	6.76	6.84	7.03
KARACHI	3.14	6.7	12.0
BANGKOK	3.27	6.07	10.71
LIMA-CALLAO	0.92	5.68	9.14
MADRAS	3.12	5.19	8.15
HONG KONG	3.53	5.13	6.37
LENINGRAD	3.96	5.11	5.93
DHAKA	1.54	4.89	11.16
MADRID	3.37	4.71	5.36
BOGOTA	2.37	4.49	6.53
BAGHDAD	2.1	4.42	7.42
PHILADELPHIA	4.05	4.18	4.36
SANTIAGO	3.01	4.16	5.26
NAPOLI	3.59	4.11	4.3

*Urban areas are listed in decreasing order of population based on the 1985 figures.

PUSAN	1.85	4.11	6.2
SHENYANG	3.14	4.08	5.35
BANGALORE	1.66	3.97	7.96
DETROIT	3.99	3.83	3.96
SYDNEY	2.68	3.78	4.23
CARACAS	2.12	3.74	5.03
LAHORE	1.97	3.7	6.16
ROME	3.07	3.69	3.87
LAGOS	1.44	3.65	8.34
WUHAN	2.73	3.38	4.35
GUANGZHOU	2.5	3.3	4.37
SAN FRANCISCO	2.01	3.3	3.55
KATOWICE	2.77	3.27	3.77
BELO HORIZONTE	1.62	3.25	5.11
BARCELONA	2.66	3.2	3.35
TORONTO	2.55	3.16	3.58
MELBOURNE	2.34	3.15	3.41
AHMEDABAD	1.74	3.14	5.28
HYDERABAD	1.8	3.12	5.13
ISTANBUL	2.78	2.94	3.29
ALEXANDRIA	2.02	2.93	4.4
WASHINGTON	2.5	2.91	3.22
ANKARA	1.27	2.9	5.2
BIRMINGHAM	2.81	2.87	2.93
MONTREAL	2.7	2.84	2.9
HOUSTON	1.7	2.83	3.65
GUADALAJARA	1.58	2.77	4.11
PORTO ALEGRE	1.55	2.74	4.02
RECIFE	1.82	2.74	3.65
RANGOON	1.42	2.73	4.32
BOSTON	2.67	2.71	2.83
CHONGJIN	2.46	2.7	3.33
CASABLANCA	1.54	2.69	4.49
KINSHASA	1.23	2.69	5.04
DALLAS	2.04	2.68	3.13
ATHENA	2.1	2.68	3.04
CHENGDU	1.58	2.67	3.57
ALGIERS	1.19	2.66	5.09
HO CHI MINH CITY	2.3	2.62	3.75
KIEV	1.65	2.61	3.44
HARBIN	2.0	2.61	3.46
SINGAPORE	1.58	2.56	2.95
MONTERREY	1.28	2.53	3.97
MANCHESTER	2.53	2.5	2.53
TAIPEI	1.5	2.5	3.68
ZIBO	1.3	2.39	3.66
SURABAYA	1.53	2.37	3.68
TURINO	1.62	2.26	2.61

XI'AN	1.73	2.26	3.0
SAN SALVADOR	1.16	2.24	3.45
BUCHAREST	1.69	2.23	2.64
LIUPANSHUI	1.66	2.19	2.92
HAMBURG	2.2	2.19	2.19
NANJING	1.78	2.14	2.75
POONA	1.13	2.13	3.69
TACHKENT	1.4	2.13	2.74
MUNICH	1.71	2.11	2.22
MEDAN	0.64	2.09	5.36
KITAKYUSHU	1.6	2.06	2.22
BUDAPEST	1.95	2.06	2.09
KANPUR	1.29	2.03	3.17
NAGOYA	1.85	2.03	2.03

Source: Encyclopedia Universalis, Paris: 1988.

APPENDIX B
REACH DOCUMENTS ON URBAN EPI

GENERAL

Urban Health in the Third World
Ken Olivola
July 1988 (revised)

BANGLADESH

Bangladesh: Social Mobilization
Outreach
Jean Paul Chaine
Spring 1990:2-3

Bangladesh Urban Immunization Program Development
Cynthia Dunn
January 6-28, 1987

Internal Review of REACH Activities in Bangladesh
Rebecca Fields, Richard Pollard, Yassin Hazza
March 1990

Monthly reports
Jean Paul Chaine, Mrudula Amin
Beginning October 1988

Perceptions of Childhood Diseases and Attitudes toward Immunization among Slum Dwellers
in Dhaka, Bangladesh
Therese Blanchet
June 1989

Pre-Strategy Document for Long-Term Intervention in Bangladesh
1988

Technical Assistance for Planning Urban Immunization Activities
Robert Steinglass
October 1989

Urban EPI Design, USAID/Dhaka
Ken Olivola, Marjorie Pollack, Melinda Wilson
January 1988

INDONESIA

Assessment of REACH EPI Assistance in Indonesia
Alasdair Wylie, Mrudula Amin
June 1990

Assistance in Planning Urban EPI Activities in Indonesia
Kenneth Olivola
June 1990

Executive Summary to SRI Report
Elaine Maran, Mayling Simpson-Hebert
May 1990

Follow-up Visit, Social Marketing Strategy for Urban EPI
Elaine Maran, Mayling Simpson-Hebert
December 1989

Social Marketing Strategy Operations Plan, Implementation Step for EPI in Jakarta and Surabaya
Elaine Maran, Mayling Simpson-Hebert
October 1989

Two Urban EPI Planning Assignments to Indonesia
Kenneth Olivola
June 1990

Urban EPI Social Marketing Study (REACH Project)
Survey Research Indonesia, REACH
July 1990

PHILIPPINES

Expanded Program on Immunization Urban Accelerated Strategy 1988-1990
Expanded Program on Immunization, Maternal Child Health Service, Department of Health
Richard Arnold
March 1988

Internal Assessment of REACH Activities in the Philippines
Rebecca Fields, Richard Sang
May 1990

Philippines Trip Report
Richard Arnold
November 1-21, 1987

Sustained Assistance in EPI and HCF Issues
Pamela Turner
November 18, 1987-April 18, 1988

Urban Accelerated Strategy 1988-90
Pamela Turner; Department of Health, Philippines
1990

SENEGAL

Rapid Assessment of Senegal's Acceleration Phase
Logan Brenzel, Pierre Claquin, Iain McLellan, Sally Stansfield
November 1987

Evaluation of the Vaccination Coverage of Children 12-23 Months Old in the Republic of Senegal
Pierre Claquin, Bruno Floury, Michel Guerin
August 27, 1987

TURKEY

Results of a Vaccination Coverage Survey in Nine Provinces in the Republic of Turkey, January-February 1988
Nilufer Unver, Mehmet Ali Biliker, Pierre Claquin
January - February 1988